

Summary

The word "hillfort" means a place where there used to be a wooden fortified settlement, the remains of which are most often traces of the embankment and the moat. Due to geographical conditions, i.e. the location in the vicinity of important trade routes (including one of the branches of the Amber Route leading through the Moravian Gate) and the border character that continued for many centuries, numerous, highly diversified fortified settlements were established in the area of today's Silesian Voivodeship. They were erected and used in various historical periods, from the Neolithic to the late Middle Ages and modern times. Traces of more than 100 wooden strongholds in this area have survived to this day, varied with a different preservation and different character, depending on the age and type of settlement, as well as topographic conditions, which were of great importance during the location of the defensive facility.

Despite the fact that the subject of vegetation of fortified settlements has already been discussed in some regions of the country, the determinants of its diversity are still poorly known, both in relation to historical aspects and the modern way of use.

The specific aims of the thesis can be grouped into three main general objectives:

A. Identification of the floristic and phytocoenotic diversity of hillforts in the Silesian Voivodeship;

B. Indication of the factors determining the floristic diversity of hillforts in the Silesian Voivodeship;

C. Determining the pattern of vegetation distribution in relation to the structure of former fortified settlements.

68 objects located within 20 physical and geographical mesoregions were selected for the study. Each site was selected on the basis of the following criteria:

– it is certified by literature sources or the register of monuments as a stronghold, or by the list of monuments of the National Heritage Board of Poland;

– on the basis of available sources, it can be unequivocally located;

– it has a topographic layout corresponding to the settlement and its boundaries are identifiable;

– it is not currently mostly occupied by the reconstruction of a castle or a stronghold, nor is it built-up, so that the actual vegetation has the character of the so-called arranged greenery;

– the object is available for research.

A detailed query of literature data, along with a prospectus of cartographic materials, made it possible to indicate historical and environmental parameters that were used in the analyzes. They included, among others information on the age of the object, type, use, geological basis.

During the research, 71 types of vegetation were found, representing 18 classes, including 37 associations. These are both natural and semi-natural communities, as well as synanthropic - ruderal and segetal. Often patches of natural vegetation are similar to phytocoenoses occurring in non-anthropogenic habitats, and some of them are protected in forest nature reserves. Among the identified, 22 plant communities are on the red list of the Silesian Voivodeship, including 8 forest communities considered to be natural.

As a result of the floristic research, 698 species of vascular plants and 77 representatives of brioflora were found. The flora of almost all the examined settlements is dominated by native non-synanthropic species, which in 18 cases account for over 90%. Only in two hillforts – dominated by arable fields – synanthropic species, especially archaeophytes, have the greatest share.

The floristic composition of vascular plants includes protected and endangered species of vascular plants, mosses and liverworts both in the region and in the country. The number of species under strict protection is 10, while the partial number is 30. There are 17 endangered species nationwide, while the number of endangered species in the region identified during the research is 224.

The main factors that determine the diversity of the flora of hillforts are the habitat characteristics and the manner of use. The most important parameter is the presence of calcium carbonate in the substrate. The statistically significant factors also include: the location of the settlement within the floodplain terrace, the swamp of the area, the forest character of the area, the presence of arable fields, grazing land, location in an urbanized area, and the level of disturbances in the ecosystem. The age of the settlement is also related to the species diversity, however, in the conditions of the Silesian Voivodeship it is a parameter strongly correlated with the height above sea level, which is historically conditioned. Due to the inability to separate the interaction of these factors, it is difficult to unequivocally prove the lack of influence of age on the vegetation cover, however, ordinal analyzes indicate factors other than age.

Species considered relics are rare in the hillforts of the Silesian Voivodeship, and their relict nature is in every case questionable. The number of relict species simply depends on the species richness of the studied objects and shows no dependence on historical aspects, even showing a weak negative correlation with medieval mottes.

Species richness depends primarily on the habitat factors, the most important of which is the presence of calcium carbonate in the substrate. The area is of minor importance and most of the large ring settlements were established on limestone hills.

106 species considered to be old forest species were found in the examined fortified settlements, and their number may exceed 40 in individual cases, and they are often abundant. The occurrence of old forest species is clearly negatively correlated with the frequency and intensity of disturbances for individual settlements, and the linear regression analysis indicates an increase in the number of old forest species along with a decrease in the level of disturbances, both within the herb layer and the entire community. The number of old forest species is poorly correlated with age, and taking into account the correlation of this factor with others, this correlation is difficult to interpret.

Hillforts are systems with a specific micro-habitat diversity, which mainly consists of the presence of marshy moats and skeletal stone and earth embankments next to each other. The communities associated with the moats include the majority of the identified rush communities and wet meadows. On the embankments and slopes there are usually acid beech forests, maple-lime forests, *Poa nemoralis-Quercus robur* community and acid oak forests. The structure of the plateau is less unique, hence the lack of good communities that could distinguish them, the most common systems are fertile beech forests and *Caricetum gracilis*.

Some of the strongholds also include limestone rocks, built into defensive systems, which are occupied by typical rock vegetation.

Hornbeam and oatgrass meadows belong to communities not related to the structural element, although they do not occur in the moats.

Due to the large diversity of habitats and different ways of use, it is impossible to indicate universal plant communities, the identification of which could be used in archeology to identify the areas occupied by strongholds. The structure of communities may, however, be a suggestion in this matter, which is commonly used.

Hillforts are a mainstay of protected, rare and endangered species of plants and plant communities, therefore in the case of undertaking activities aimed at the reconstruction of former strongholds, it is advisable to carry out a natural inventory to reconcile the interests of protection and displaying historical values with nature protection. Also, when conducting

archaeological research related to the transformation of the soil cover, the aspect of impact on valuable natural resources should be taken into account.

The conducted floristic and phytosociological studies have shown that synanthropic habitats, such as hillforts, are subject to naturalization without direct human interference and their vegetation is mainly the result of current use and not historical conditions.